

Nalco Docket No. 7774
Customer No. 49459

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LISTING OF CLAIMS

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Claim 1 (currently amended): A synthetic metal-containing colloidal silicate composition comprising:

a metal-silicate lattice solid phase having colloidal particles, wherein said lattice exists in both amorphous and generally spherical colloidal particles and/or crystalline material;

a metal covalently copolymerized and incorporated into said lattice within the colloidal particles; and

a continuous aqueous phase.

Claim 2 (currently amended): The colloidal silicate composition of claim 1, wherein the metal-silicate lattice solid phase includes from about 0.001 wt% to about 35 wt % or less of the metal based on silica.

Claims 3 to 7 (cancelled)

Claim 8 (currently amended): The colloidal silicate composition of claim 1, wherein one or more of the colloidal particles includes a layered structure within the amorphous and generally spherical colloidal particles and/or crystalline material.

Claim 9 (cancelled)

Claim 10 (previously presented): The colloidal silicate composition of claim 1, wherein the copolymerized metal is selected from the group consisting of an alkali metal, an alkaline earth metal, a 1st row transition metal, a 2nd row transition metal, a lanthanide, and combinations thereof.

Claim 11 (previously presented): The colloidal silicate composition of claim 1, wherein the metal-silicate solid phase includes about 2 wt % or less of the metal based on silica.

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Claim 12 (withdrawn): A method of forming a colloidal composition, the method comprising the steps of:

preparing a heel solution including a stabilizer;

preparing a silicic acid solution; and

mixing and further processing the heel solution and the silicic acid solution to form the colloidal composition.

Claim 13 (withdrawn): The method of claim 12, wherein a metal is added to the heel solution.

Claim 14 (withdrawn): The method of claim 13, wherein the colloidal composition includes the stabilizer and a silicate doped with the metal such that the stabilizer and the metal are dispersed within one or more particles of the silicate.

Claim 15 (withdrawn): The method of claim 14, wherein the silicate doped with metal includes about 35 wt % or less of the metal based on silica.

Claim 16 (withdrawn): The method of claim 12, wherein the colloidal composition is further processed to form a crystalline structure.

Claim 17 (withdrawn): The method of claim 16, wherein the colloidal composition is further processed by heating.

Claim 18 (withdrawn): The method of claim 16, wherein a metal is added to the heel prior to crystallization.

Claim 19 (withdrawn): The method of claim 18, wherein the colloidal composition includes a zeolite.

Claim 20 (withdrawn): The method of claim 12, wherein the stabilizer includes a quaternary amine.

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Claim 21 (withdrawn): A method of forming a colloidal silicate composition, the method comprising the steps of:

preparing a silicic acid solution, a metal silicate solution and an alkaline solution;
mixing and further processing the silicic acid solution and the metal silicate solution with the alkaline solution; and
forming one or more silicate particles doped with a metal wherein the metal is dispersed within one or more of the silicate particles.

Claim 22 (withdrawn): The method of claim 21, wherein the metal is dispersed in a controlled manner.

Claim 23 (withdrawn): The method of claim 21, wherein the silica particles doped with metal include about 2 wt% of the metal based on silica.

Claim 24 (withdrawn): The method of claim 21, wherein the metal is selected from the group consisting of an alkali metal, an alkaline earth metal, a 1st row transition metal, a 2nd row transition metal, a lanthanide, and combinations thereof.

Claim 25 (withdrawn): A method of controlling a location of a metal within a metal-containing silica colloid, the method comprising the steps of:

preparing a silicic acid solution, a metal silicate solution and an alkaline solution;
and
selectively adding the metal silicate solution and the silicic acid solution to the alkaline solution to form a colloid of silica particles containing the metal.

Claim 26 (withdrawn): The method of claim 25, further comprising adding the metal silicate solution before the silicic acid solution and forming the colloid of silica particles wherein the metal is dispersed within an interior layer of one or more of the silica particles.

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Claim 27 (withdrawn): The method of claim 25, further comprising adding the silicic acid solution before the metal silicate solution and forming the colloid of silica particles wherein the metal is dispersed within an outer layer of one or more of the silica particles.

Claim 28 (withdrawn): The method of claim 25, further comprising adding the metal silicate solution and the silicic acid solution in an alternating manner and forming the colloid of silica particles having a metal-containing layer and a non-metal containing layer.

Claim 29 (withdrawn): The method of claim 28, wherein one or more of the silica particles includes a layered structure that has the non-metal containing layer disposed on the metal containing layer in a repeat manner.

Claims 30 and 31 (cancelled)

Claim 32 (previously presented): The colloidal silicate composition of claim 1, wherein the colloidal particles are generally spherical.

Claim 33 (previously presented): The colloidal silicate composition of claim 1, wherein a stabilizer is dispersed within the metal-silicate lattice.